

PUBLIC HEALTH FACT SHEET

Eastern Equine Encephalitis

Massachusetts Department of Public Health, 305 South Street, Jamaica Plain, MA 02130

What is Eastern Equine Encephalitis?

Eastern Equine Encephalitis (EEE) is a rare but serious disease caused by a virus. The virus grows in birds that live in freshwater swamps, and it is usually found only in these birds and in mosquitoes that do not bite people. Sometimes the virus gets picked up by other kinds of mosquitoes that bite horses and people. The risk of getting EEE is highest from late July through September. The virus that causes EEE is spread by adult mosquitoes, which are killed by frost in the fall.

What are the symptoms of EEE?

The first symptoms of EEE are high fever (103° to 106°F), stiff neck, headache, and lack of energy. These symptoms show up two to ten days after infection. Swelling of the brain, called encephalitis, is the most dangerous symptom. The disease gets worse quickly, and some patients may go into a coma within a week.

What is the treatment for EEE?

There is no cure for EEE, and three of every ten people who get the disease die from it. All doctors can do is lower the fever and ease the pressure on the brain and spinal cord. Some people who survive this disease will be permanently disabled. Very few people recover completely.

How is EEE spread?

EEE is spread only by mosquitoes. People and horses with EEE cannot spread the disease.

How common is EEE in Massachusetts?

EEE is very rare. Only about 80 cases have been reported in Massachusetts since it was first described in 1938. Most cases have been in Plymouth and Norfolk counties, with a few in Middlesex, Bristol, Suffolk, Barnstable, and Essex counties. Rare cases have occurred outside of Eastern Massachusetts.

What can you do to protect yourself?

There is an EEE vaccine for horses, but not for people. The best way to protect yourself is to keep mosquitoes from biting you. Follow these steps every summer to reduce your risk of being bitten by mosquitoes, particularly if you live near natural wetlands.

- If you must be outdoors at dusk or dawn, when mosquitoes that carry EEE are most active, wear a long-sleeved shirt and long pants. Take special care to cover up the arms and legs of children playing outdoors. When you bring a baby outdoors, cover the baby's carriage or playpen with mosquito netting.
- Use a mosquito repellent that contains DEET (the chemical N-N-diethyl-meta-toluamide) and follow the directions on the label. DEET can be poisonous if overused. Never use DEET on infants and do not apply repellents to the face or hands of children. Avoid using repellents with DEET concentrations above 10-15% for children and with concentrations above 30-35% for adults. Higher concentrations of DEET may provide protection for a longer period of time, but do not provide a higher level of protection. If you are concerned about exposures to chemicals, use the lowest concentration of DEET which provides protection for the length of time you will be exposed to mosquitoes, and wash your skin when you return indoors. Cream, lotion or stick formulas are best for use on skin. Avoid products with high amounts of alcohol because these may be absorbed through the skin.
- Repair any holes in your screens and make sure they are tightly attached to all your doors and windows.

What can you do to reduce the number of mosquitoes around your home and neighborhood?

To reduce mosquito populations around your home and neighborhood, get rid of any standing water that is available for mosquito breeding. Mosquitoes will begin to breed in any puddle or standing water that lasts for more than four days. Here are some simple steps you can take:

- Dispose of or regularly empty any metal cans, plastic containers, ceramic pots, and other water holding containers (including trash cans) on your property.
- Pay special attention to discarded tires that may have collected on your property. Stagnant water in tires is a common place for mosquitoes to breed.
- Drill holes in the bottom of recycling containers that are left outdoors, so that water can drain out.
- Clean clogged roof gutters; remove leaves and debris that may prevent drainage of rainwater.
- Turn over plastic wading pools and wheelbarrows when not in use.
- Do not allow water to stagnate in birdbaths; aerate ornamental ponds or stock them with fish.
- Keep swimming pools clean and properly chlorinated; remove standing water from pool covers.
- Use landscaping to eliminate standing water that collects on your property.

What does the state do to protect people from EEE?

Massachusetts developed a complete Surveillance and Response Plan that coordinates efforts of local officials and state agencies to reduce the risk of EEE. The plan involves checking for the virus in mosquitoes, reducing the number of mosquitoes in the environment, and educating people on ways to avoid mosquito bites. Every year from May until the first hard frost, the Massachusetts Department of Public Health (MDPH) and local mosquito control districts collect mosquitoes from various locations around the state and send them to the State Laboratory for testing. If the virus that causes EEE is found in mosquitoes, MDPH will tell local boards of health and mosquito control districts and ask them to increase their education and mosquito control activities. MDPH provides educational materials for physicians, veterinarians, local public health officials, and the public along with updates on EEE activity in mosquitoes, horses and humans online.

For more information:

- **Massachusetts Department of Public Health**
 - Bureau of Communicable Disease Control, Division of Epidemiology and Immunization at (617) 983-6800 or toll free at (888) 658-2850 or online at www.mass.gov/dph (disease questions or testing)
 - Bureau of Environmental Health Assessment at (617) 624-5757 (health effects of pesticides)
- **Massachusetts Department of Agricultural Resources**
 - Bureau of Animal Health at (617) 626-1795 (vaccination for horses)
 - State Reclamation and Mosquito Control Board at (617) 626-1781 (mosquito control)
 - Regional Mosquito Control District Programs:
 - Cape Cod at (508) 775-1510
 - East Middlesex County at (781) 899-5730
 - Plymouth County at (781) 585-5450
 - Bristol County at (508-823-5253
 - Norfolk County at (781) 762-3681
 - Suffolk County at (617) 361-0550
 - North East Management (Essex County) at (978) 474-4640
 - Central Massachusetts at (508) 393-3055
 - Berkshire County at (413) 447-9808
- **Massachusetts Poison Control Center** at (617) 232-2120 (Boston) or 1-800-682-9211 (other areas in Massachusetts) or 1-888-244-5313 (hearing impaired) (adverse reactions to pesticides)
- **Your local Board of Health** (listed in the phone directory under “government)